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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/926,399	01/14/2002	Takashi Enomoto	215225US2PCT	1665

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EXAMINER	
COLON, GERMAN	

ART UNIT	PAPER NUMBER
2879	

DATE MAILED: 12/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/926,399	ENOMOTO ET AL.	
	Examin r	Art Unit	
	German Colón	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 September 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. The Amendment, filed on September 05, 2003, has been entered and acknowledged by the Examiner.

2. Cancellation of claims 1-14 has been entered.

3. Addition of claims 15-25 has been entered.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 25 recites the limitation "the getter film" in line 6. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 15-17, 19-23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pepi et al. (US 5,876,260) in view of Wallace et al. (US 5,614,785).

Regarding claim 15, Pepi discloses a manufacturing method of a flat display panel, including joining a substrate which has an electron emitting element and a faceplate **2** which has a phosphor screen, so that the electron emitting element and the phosphor screen face to each other with a gap, comprising:

treating the faceplate, wherein treating the faceplate comprises irradiating of electron beam onto the faceplate accommodated in a treatment vessel, while heating the faceplate in a vacuum atmosphere (see Col. 5, lines 10-11, and Col. 8, lines 10-12);

assembling the substrate and the faceplate; and

heating and joining the assembled one in a vacuum atmosphere (see Col. 5, lines 45-60). Pepi is silent regarding the limitation of "forming a getter film on the faceplate by means of vapor deposition".

However, in the same field of endeavor, Wallace discloses a flat panel display comprising an electron emitting element and a faceplate with a phosphor screen, the faceplate further comprising an opaque getter formed by vapor deposition, said getter being disposed in close proximity to the display elements with the purpose of maintaining the vacuum integrity over the life of the display, reducing gas pressure, and enhancing the contrast ratio of the display (see Col. 2, lines 25-31 and 43-45, and Col. 6, lines 40-41). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the getter disclosed by Wallace to the FED of Pepi, in order to maintain the vacuum integrity over the life of the display, reducing gas pressure, and to enhance the contrast ratio of the display.

Regarding claim 16, Pepi-Wallace discloses the claimed invention except for the limitation of "the irradiating of the substrate and the faceplate being carried out in the same treatment vessel". However, Pepi teaches that the choice of transfer between the various sections of the installation depends on the equipment thereof, provided that the plates are not put to air between the various sections; further an embodiment wherein the plates are manually handled or transferred is disclosed (see `260 Col. 8, lines 13-20). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to irradiate the substrate and the faceplate in the same treatment vessel, in order to facilitate the manufacture of the FED provided that the plates are manually handled or transferred. Further, a person skilled in the art could have easily conceived of treating the substrate and the faceplate in the same treating vessel.

Regarding claim 17, Pepi-Wallace discloses the electrons being irradiated by a plurality of electron sources, disposed on the treatment vessel (see `260, Col. 5, line 26-27). The Examiner notes that US `260 discloses microtips as electron sources, each microtip irradiating electrons, therefore, each of said microtips is a source of electrons. Furthermore, the provision of a plurality of electron sources is a matter of design choice practiced by a person skilled in the art.

Regarding claim 19, Pepi-Wallace discloses the electrons being emitted from a planar type electron source (see `260, Col. 5, line 27).

Regarding claim 20, Pepi-Wallace discloses the electrons being irradiated in a vacuum atmosphere of which degree of vacuum is maintained at 10^{-3} Torr or less (see `260, Col. 4, lines 65-66).

Referring to claim 21, Pepi-Wallace discloses at least one of the substrate and the faceplate being heated at a temperature in the range of 200 to 400°C in the irradiating of electrons (see '260, Col. 5, lines 1-11 and Col. 8, lines 10-12).

Referring to claim 22, Pepi-Wallace discloses after the irradiating of electrons, an irradiated object is cooled to a temperature of 100°C or less (see '260, Col. 5, line 4). The Examiner notes that after the irradiating of electrons, no further heating step is carried out, thus, the temperature is 100°C or less in view of Col. 5, line 4.

Referring to claim 23, Pepi-Wallace discloses the substrate and the faceplate being joined through a supporting frame in a vacuum atmosphere after the electrons are irradiated onto at least one of them (see '260, Col. 5, lines 45-49 and Col. 6, lines 8-10).

Referring to claim 25, Pepi discloses a manufacturing equipment of a flat display panel, in which a substrate having an electron emitting element and a faceplate having a phosphor screen, are joined so that the electron emitting element and the phosphor screen face to each other with a gap, comprising (see Col. 4, lines 11-28 and 60-67):

(A) a baking and electron beam cleaning chamber;

(B) an assembly chamber;

(C) a heat treatment chamber; and

(D) transferring means for transferring and sending at least one of the substrate and the faceplate in and out of the chambers (see Fig. 3); wherein

(A) the baking and electron beam cleaning chamber comprises:

(a) a treatment vessel in which at least one of the substrate and the faceplate is accommodated (see Fig. 3),

(b) exhausting means for evacuating the inside of the treatment vessel to a vacuum atmosphere (see Col. 4, lines 64-66),

(c) irradiating means for irradiating the electron beam onto the faceplate,

(d) means for heating at least one of the substrate and the faceplate;

(B) the assembly chamber comprises (see Col. 5, lines 45-60):

(a) a treatment vessel in which the substrate and the faceplate, both held with a predetermined spacing distance are accommodated, and

(b) exhausting means for evacuating the inside of the treatment vessel to a vacuum atmosphere; and

(C) the heat treatment chamber comprises:

(a) a treatment vessel in which the assembled object is accommodated, and

(b) means for heating and joining the substrate and the faceplate.

Pepi is silent regarding the limitation of "the manufacturing equipment further comprises a vapor deposition chamber in which the getter film is formed".

However, in the same field of endeavor, Wallace discloses a flat panel display comprising an electron emitting element and a faceplate with a phosphor screen, the faceplate further comprising an opaque getter formed by vapor deposition, said getter being disposed in close proximity to the display elements with the purpose of maintaining the vacuum integrity over the life of the display, reducing gas pressure, and enhancing the contrast ratio of the display (see Col. 2, lines 25-31 and 43-45, and Col. 6, lines 40-41). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the teachings of Wallace to provide a vapor-deposited getter to the FED of Pepi, in order to maintain the vacuum integrity

over the life of the display, reducing gas pressure, and to enhance the contrast ratio of the display. One person having ordinary skill in the art would entertain the idea of providing a vapor deposition chamber to the manufacturing equipment of Pepi in order to provide the getter disclosed by Wallace.

8. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pepi-Wallace as applied to claim 15 above, and further in view of Chen (US 3,732,359).

Pepi-Wallace discloses the claimed invention except for the limitation of "the electrons being deflected while irradiated". Pepi-Wallace teaches the electron source being a conventional scanning electron gun (see `260, Col. 5, line 21). Chen discloses a scanning electron gun and teaches said electron gun comprising deflection means in order to scan the electron beams. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide deflection means to the electron gun of Pepi-Wallace, since Pepi-Wallace teaches said electron gun being a conventional scanning electron gun which Chen discloses comprising deflection means in order to scan electron beams. Further, it is well known in the art that electron guns comprise deflection means.

9. Claim 16 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pepi-Wallace as applied to claims 15 and 23 above, and further in view of Browning et al. (US 6,409,564).

Regarding claims 16 and 24, Pepi-Wallace discloses the claimed invention except for the limitation of "the supporting frame being irradiated with electron in the irradiating of electrons".

However, in the same field of endeavor, Browning teaches that the release of oxygen (and sulfur) from the phosphor, organic binders and metal layers may oxidize the emitting tip, which accounts for serious degradation problems in FEDs, and that electron bombardment is used to remove oxygen from the display (see Col. 4, lines 45-54 and Col. 7, lines 5-15). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to irradiate the supporting frame of Pepi-Wallace, which comprises metal and silicon oxide, in order to remove the oxygen from the display that may oxidize the emitting tip, resulting in serious degradation problems in FEDs. The Examiner notes that during the irradiation of the frame, both the faceplate and the substrate are accommodated in the same treatment vessel.

Response to Arguments

10. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Prior Art or Record

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Kosugi et al. (US 2002/0142698) discloses a desorption process for flat panel display comprising irradiating of electrons.

Fukuta et al. (US 5,587,720) discloses a method of cleaning an FED comprising an electron irradiating process.

Cooper et al. (US 6,517,403) discloses an apparatus for sealing FEDs comprising an electron irradiating chamber.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to German Colón whose telephone number is 703-305-5987. The examiner can normally be reached on Monday thru Thursday, from 8:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 703-305-4794. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

gc

ASHOK PATEL
PRIMARY EXAMINER